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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/904,105      | 07/13/2001  | Toshiki Tachikawa    | 107292-00023        | 1324             |

4372 7590 10/20/2004

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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |   |  |
|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/904,105 | <b>Applicant(s)</b><br>TACHIKAWA ET AL. |  |
|                              | <b>Examiner</b><br>LAM S NGUYEN      | <b>Art Unit</b><br>2853                 |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 August 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-10 is/are allowed.
- 6) ☐ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3/1, 4/1, 5/1, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. (US 6218675) in view of Pu (US 6034377).

Akiyama et al. disclose a charged-particle beam irradiator comprising a plurality scan electromagnets (*Fig. 4, elements 100, 110*) provided on an entrance side of a final deflection electromagnet (*Fig. 4, element 9*) to scan a charged-particle beam to expand an irradiation field.

Akiyama et al. do not disclose wherein the plurality of scan electromagnets are for one direction and kicks provided by the plurality of said scan electromagnets are superimposed in said one direction to form a collimated irradiation field at an exit of said final deflection electromagnet.

Pu discloses a charged particle beam irradiation apparatus includes a plurality of scan electromagnets for one direction (*Fig. 3, elements 33, 35: The scan electromagnets scan the beam 31 in a direction that is orthogonal to the incident direction of the beam 31*) and wherein kicks provided by the plurality of said scan electromagnets are superimposed in the direction to form a collimated irradiation field (*FIG. 3*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the charged particle beam irradiation apparatus disclosed by

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Akiyama et al. such as replacing the plurality scan electromagnets by the ones having kicks are superimposed in one direction as disclosed by Pu to form a collimated irradiation field at the entrance side of the final deflection magnet in order to produce a collimated irradiation field at the exit side of the final deflection magnet. The motivation of doing so is to produce a uniform magnetic field wherein the directions of the magnetic lines of forces are opposite to each other and the strength and the length of the effective magnetic field is the same as taught by Pu (*column 4, lines 8-15*).

Akiyama et al. also disclose the following claimed inventions:

**Referring to claim 3/1:** wherein said plurality of scan electromagnets (*Fig. 4, elements 100, 110*) are interposed between said final deflection electromagnet (*Fig. 4, element 9*) and a deflection electromagnet (*Fig. 4, element 6*) disposed on an entrance thereof.

**Referring to claim 4/1:** wherein said plurality of scan electromagnets (*Fig. 4, elements 100, 110*) are disposed upstream from a deflection electromagnet (*Fig. 4, element 8*) disposed on an entrance of said final deflection electromagnet (*Fig. 4, element 9*).

**Referring to claim 5/1:** wherein said plurality of scan electromagnets (*Fig. 4, elements 100, 110*) disposed independent of each other in X and Y directions.

***Allowable Subject Matter***

2. Claims 7-10 are allowed and claims 2, 3/2, 4/2, and 5/2 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for allowance of claims 2 and 7 were indicated in the previous office action. Claims 3/2, 4/2, 5/2, and 8-10 are allowed because they depend directly/indirectly on claim 2 or 7.

***Response to Arguments***

Applicant's arguments filed 08/27/2004 have been fully considered but they are not persuasive.

The applicants argued that neither Pu nor Akiyama disclose or suggest a plurality of scan electromagnets for one direction. The examiner does not agree because, as disclosed by Pu, the scan electromagnets 33 and 35 scan the irradiation beam 31 in a direction that is orthogonal to the incident direction of the beam 31.

In addition, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the evidence of the desirability for combination of the references is to produce a uniform magnetic field wherein the directions of the magnetic lines of forces are opposite to each other and the strength and the length of the effective magnetic field is the same as taught by Pu (*column 4, lines 8-15*).

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN  
October 15, 2004



Stephen D. Meier  
Primary Examiner